## REMARKS

In the above-captioned Office Action, claims 1-4 and 13-17 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Hayashi et al. (U.S. Patent No. 6,404,778, hereinafter "Hayashi") and claims 5-12 and 18-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hayashi. The applicants respectfully disagree with the Examiner's claim rejections and request reconsideration. The Examiner's thoughtful and thorough reply in the *Response to Arguments* section of the present office action is appreciated. The claims have been specifically amended to more clearly express the invention and to address some of the unintended interpretations expressed by the Examiner. Specifically, claims 1 and 13 now explicitly recite that the guard time has "a time length equal to the difference between the first time length and the second time length."

The Examiner cites various portions of Hayashi in the rejection of clams 1 and 13. These portions, somewhat expanded to include the surrounding text for context, are reproduced below. Column 5, line 66 – column 6, line 38 Hayashi reads (emphasis added):

> FIG. 3 illustrates an exemplary frame configuration in a digital mobile communication apparatus using a CDMA system and a TDD system in the first embodiment of the present invention. In FIG. 3 , a frame is composed of a reverse link burst and a forward link burst. Frame length 300 is a sum of reverse link burst length 310 and forward link burst length 320 . The reverse link burst is composed of reverse link communication control bits 311 and reverse link user information bits 312 . The forward link burst is composed of forward link communication control bits 321 and forward link user information bits 322 . When the bits number of reverse link communication control bits 311 is referred to Cr and the bits number of forward link communication control bits 321 is referred to Cf, Cr is larger than Cf. When the bits number of reverse link user information bits 312 is referred to Ir and the bits number of forward link user information control bits 322 is referred to If, Ir is equal to if. Accordingly, reverse link burst length 310 , which is a sum of reverse link communication control bits 311 and reverse link user information bits 312 , is longer than forward link burst length 320 , which is a sum of forward link communication control bits 321 and forward link user information bits 322.
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> An explanation is given to an operation in a digital mobile communication apparatus using a CDMA system and a TDD system configured as described above. Herein it is assumed that the path communication quality of a reverse link is lower than that of a forward link. <u>**Communication control bits are composed of guard time bits**</u> **inserted to prevent reverse link and forward link from the collision caused by a propagation delay, unique word bits to acquire and hold the frame synchronization, training bits and pilot bits to control adapting the elimination of**

**the propagation path interference and adapting the equalization, bits to control the transmission power and the switching of a channel.** The more the bits number of training bits and pilot bits to control the adapting are increased, the more the capability of the elimination of the propagation path interference and the equalization are increased. That allows improving of the communication quality of user information.

Column 8, line 55 – column 9, line 40 Hayashi reads (emphasis added):

FIG. 5 illustrates an exemplary frame configuration in a digital mobile communication apparatus using a TDD system and a CDMA system in the first embodiment of the present invention, and the case where the path communication quality of a reverse link is lower than that of a forward link. In FIG. 5 , a frame is composed of a reverse link burst and a forward link burst. Frame length 1400 is a sum of reverse link burst length 1410 and forward link burst length 1420 . The reverse link burst is composed of reverse link communication control bits 1411 , reverse link user information bits 1412 and reverse link error correction bits 1413 . The forward link burst is composed of forward link communication control bits 1421 , forward link user information bits 1422 and forward link error correction bits 1423 . When the bits number of reverse link communication control bits 1411 is referred to Cr and the bits number of forward link communication control bits 1421 is referred to Cf, Cr and Cf are equal. When the bits number of reverse link user information bits 1412 is referred to Ir and the bits number of forward link user information control bits 1422 is referred to If, Ir and If are equal. When the bits number of reverse link error correction bits 1413 is referred to Fr and the bits number of forward link error correction bits 1423 is referred to Ff, Fr is larger than Ff. Accordingly, reverse link burst length 1410 , which is a sum of reverse link communication control bits 1411 , reverse link user information bits 1412 and reverse link error correction bits 1413 , is longer than forward link burst length 1420 , which is a sum of forward link communication control bits 1421 , forward link user information bits 1422 , and forward link error correction bits 1423.

An explanation is given to an operation in a digital mobile communication apparatus using a CDMA system and a TDD system configured as described above. **Communication control bits are composed of guard time bits inserted to prevent reverse link and forward link from the collision caused by a propagation delay, unique word bits to acquire and hold the frame synchronization, training bits and pilot bits to control adapting the elimination of the propagation path interference and adapting the equalization, bits to control the transmission power and the switching of a channel. User information bits are, for instance, coded voice signal in a phone.** Error correction bits are the information in a reception side to correct the error that may occur in communication control bits and user information bits on a propagation path, and generated in a transmission side based on the communication control bits and user information bits. The error correction capability depends on the ratio of the original bits number and the error correction coded bits number (error correction code rate). The more the bits number of error correction bits is increased (the lower error correction code rate goes), the more the capability of the error correction is increased

Column 12, line 55 – column 13, line 42 Hayashi reads (emphasis added):

FIG. 7 illustrates an exemplary frame configuration in a digital mobile communication apparatus using a CDMA system and a TDD system in the third embodiment of the present invention. In FIG. 63 , a frame is composed of a reverse link burst and a forward link burst. Frame length 2300 is a sum of reverse link burst length 2310 and forward link burst length 2320 . Reverse link burst length is referred to Tr, and forward link burst length is referred to Tf. The reverse link burst is composed of reverse link communication control bits 2311 and reverse link user information bits 2312 . The forward link burst is composed of forward link communication control bits 2321 and

> forward link user information bits 2322. The bits number of reverse link communication control bits 2311 and forward link communication control bits 2321 is referred to C, the bits number of reverse link user information bits 2312 and forward link user information control bits 2322 is referred to I. Reverse link spreading factor 2314 is referred to Sr, and forward link spreading factor 2324 is referred to Sf, and it is assumed that Sr is larger than Sf. Since the bits number of communication control bits in the reverse link and those in the forward link are equal, reverse link burst length 2310 is longer than forward link burst length 2320 when reverse link spreading factor Sr 2314 is larger than forward link spreading factor Sf 2324. Herein, a spreading factor is a ratio of a symbol rate before the spreading (for instance, one bit/symbol in BPSK modulation, and two bits/symbol in QPSK modulation) to a chip rate after the spreading. When the numbers of symbols before the spreading are the same, after the spreading, the number of chips in the symbol with high spreading factor is larger than that with low spreading factor.
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> An explanation is given to an operation in a digital mobile communication apparatus using a CDMA system and a TDD system configured as described above. In a CDMA system, an information signal is multiplied with a spreading code. The spreading code length is the spreading factor. The frequency band is spread to transmit, a reception side obtains the despreading process gain corresponding to the spreading factor. Accordingly, the larger spreading factor allows a communication to have the higher resistance to propagation path noise. **<u>Communication control bits are composed of guard time bits</u> inserted to prevent reverse link and forward link from the collision caused by a propagation delay, unique word bits to acquire and hold the frame synchronization, training bits and pilot bits to control adapting the elimination of the propagation path interference and adapting the equalization, bits to control the transmission power and the switching of a channel.** The larger the spreading factor and the process gain are increased, the more the training of adaptive control accuracy is increased, which results in the increase of the functions of the elimination of the propagation path interference and the equalization. And the higher resistance to propagation path brings the higher control accuracy of transmission power or the like, which results in the high resistance to propagation path interference.

Hayashi specifically refers to guard time bits as being contained within the communication control bits. However, the communication control bits include bits in addition to the guard time bits. Thus, it is unclear how many bits make up the guard time bits of Hayashi or how much guard time they provide. The applicants do not understand Hayashi to teach about guard time other than by referencing the guard time bits. The applicants also do not understand Hayashi to teach or suggest anything about the length of guard time that is provided.

Moreover, Hayashi appears to teach the use of guard time bits to provide a guard time. In contrast, claims 1 and 13 recite that the first time length is shorter than the second time length thereby providing a guard time having a time length equal to the difference between the first time length and the second time length. Therefore, it is the difference in transmission time lengths that provides a guard time in the present application, not the use of specific guard time bits as in

Hayashi. Thus, the applicants submit that Hayashi does not teach or suggest their invention as presently claimed.

Since Hayashi does not teach all of the limitations of the present independent claims, or therefore, all the limitations of their respective dependent claims, each of which includes the all limitations of one of these independent claims, the applicants assert that the Examiner has not shown anticipation nor made a prima facie case for obviousness. The applicants now respectfully submit that the claims in their present form are patentable over the prior art of record, and are in condition for allowance. As a result, allowance of this case and early passage to issue is earnestly solicited.

The Examiner is invited to contact the undersigned, if such communication would advance the prosecution of the present application. Lastly, please charge any additional fees (including extension of time fees) or credit overpayment to Deposit Account No. **502117 – Motorola, Inc.**

Respectfully submitted,
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